

CALIFORNIA INSTITUTE OF TECHNOLOGY  
PASADENA

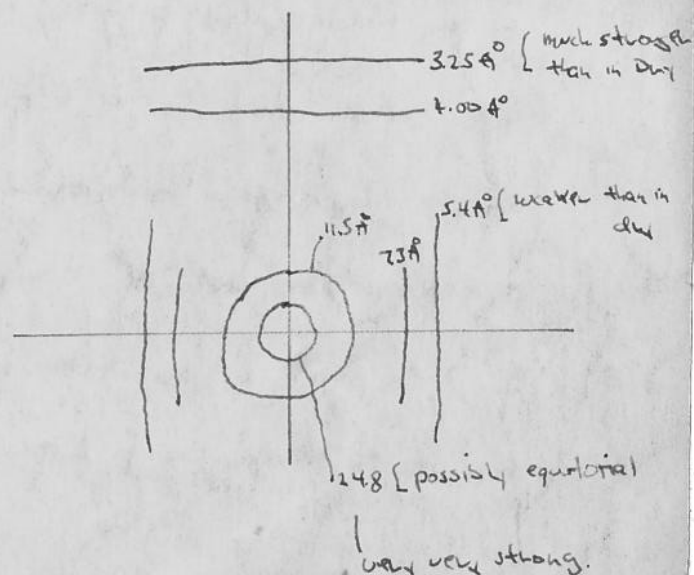
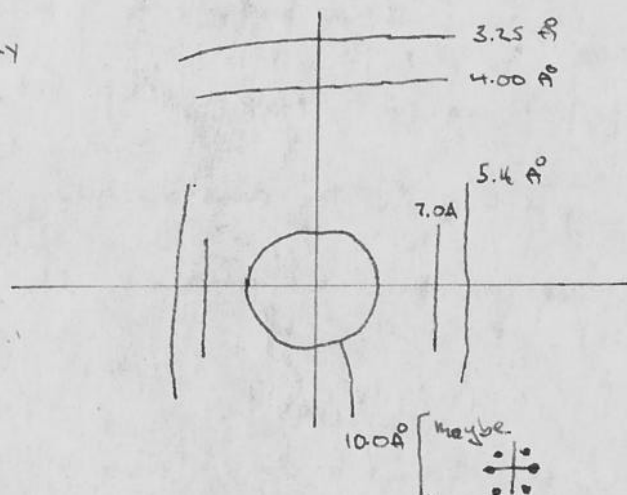
DIVISION OF BIOLOGY  
KERCKHOFF LABORATORIES OF BIOLOGY

March 28, 1954

Dear Francis

I enclose a copy of a note to "Nature" which I have asked Max to send to Gale. It is straightforward and not exciting but I feel it's best that we publish the basic data instead of someone else. We have not presented our data from the fibre diagrams since ~~our~~ <sup>our</sup> pictures remain messy despite effort and we are still unable to resolve the inner rings neatly. What we have so far looks like the below

A Dry



In some ways the pictures are remarkably similar to DNA, though obviously different in several points. I would definitely guess toward a similar structure if the base pairs existed in the plant viruses and despite this difficulty still do so.

Nevertheless we have considered single strand helices of various types. The prettiest of these (found by Alex) has a sugar phosphate core, a pitch of 4.3 Å, 2.15 residues per turn and is held together by hydrogen bonds from position 2 on the sugar to one of the phosphate oxygens. It is neat and compact and I think quite wrong because of its failure to account for the wet picture. I suspect that the 12 Å reflexion arises from the pitch and so we are back toward a DNA like structure without having any

solid idea how to build one [we are now even imagining branches!]. The whole thing is puzzling and paradoxical (for sure DNA be wrong) and is slowly driving me to despair and to loath nuclear acids. Better pictures will obviously help, a clearer idea even more. Leslie Orgel is also interested in solving mess and so occasionally is Dick Feynman but so far we are impotent.

I am now in a mood to write up the fibre diagrams and to present paradox. Will probably do so this coming week to show you in Oak Ridge.

Concerning Oak Ridge: (1) I have no worthwhile ideas about recombination - Will probably give a talk underlining difficulties in at present extrapolating from our structure. - (Very funny turnover data - possibilities of chain breakage, etc.

Am not sure of where I shall stay in Washington - Possibly Cosmos Club. if they are not filled with Academy members. Will probably arrive on Saturday or early Sunday and leave on Tuesday. Am meeting Hu in either Washington or afterwards in Philadelphia or New York. I shall possibly <sup>drive</sup> ~~take~~ to Vassar on Saturday for a days vacation from science. It is thus best if we could talk in quiet between Oak Ridge and Washington. Some friends from Urbana plan to go into the mountains near Oak Ridge for a day or so after the meetings. Why don't we join them and afterwards fly from Knoxville to Washington [Saturday?].

I shall leave here on Thursday April 15th and stay 2 days at home before going to Urbana on Saturday and driving from there to Oak Ridge on Sunday.

Am quite anxious to talk with you. Alex is not interested in really understanding picture and Leslie is not a crystallographer. It is obviously a much tougher puzzle than DNA.

Write soon

Jim

P.S. Congratulations on daughter - come? - Am saying that Sebastian Thompson Chick is not yet possible - is it Aileen Chick?